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EXAMINER

BEFUMO, JENNA LEIGH

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/890,863
Filing Date: August 07, 2001
Appellant(s): HAYAKAWA ET AL.

Eric J. Robinson
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed September 22, 2005 appealing from the Office action mailed May 20, 2005.

②

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct. The amendment after final rejection filed on August 19, 2004 has not been entered.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,233,821	WEBER, JR et al.	8-1993
4,856,110	GIESICK	8-1989

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4,918,912 WARNER 4-1990

4,936,085 KOLMES 6-1990

Research Disclosure #35439 "Uses for PBO Fiber" October 1993.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

I. Claims 21 – 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term “diaphragm” recited in claim 21 is indefinite since it is unclear what portion of the diaphragm is made up by the woven fabric and what additional structural limitations of the diaphragm are claimed. The claim recites that the fabric is at least a portion of the diaphragm, but the applicant does not recite any other additional structural limitations of the diaphragm.

What structure does the “diaphragm” recitation add to the woven fabric? What is the minimum structure required in the woven fabric for it to function as a diaphragm? Can the diaphragm be made of only the woven fabric as recited in claim 19? Does the fact that the fabric is used as a diaphragm require that the fabric be treated or combined with an additional layer in any way?

Claim 23 is similarly rejected.

Claims 22 and 24 are rejected since it is unclear what the structure of the loud speaker and the loud speaker diaphragm are. What is the minimum structure required by the terms “loud speaker” and “loud speaker diaphragm”? The claim positively recites that the diaphragm is made up a woven fabric, but does not recite any limitations of the speaker or the diaphragm, or even recite if anything is done to the fabric to render it a loud speaker diaphragm? Claim 24

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recites that the fabric is at least a portion of the diaphragm but does not recite any structural limitations of the rest of the diaphragm. Further, neither claim positively recites structure of the speaker itself or how the diaphragm relates to the speaker structure. Does the loud speaker need to have any additional components other than the diaphragm which is made from the woven fabric? Does the diaphragm need to have any other treatments or additional components other than the claimed woven fabric?

II. Claims 19 – 24 stand rejected under 35 U.S.C. 102(b) as being anticipated by Weber, Jr. et al.

Weber, Jr. et al. discloses a fabric containing a plurality of polybenzoxazole (PBO) fibers (column 1, lines 38 – 48). The PBO fibers may be grouped together to form twisted or untwisted yarns and staple or continuous yarns (column 5, lines 9 – 21). The yarn may be made into a fabric or article by knitting or weaving (column 5, lines 61 – 63). The yarn can also be a composite fiber which contains PBO fibers and aramid, glass, gel-spun polyethylene or steel fibers as cut resistant fibers (column 6, lines 1 – 12). The cut resistant fibers are preferably present in the core of the yarn and wrapped by wrap fibers (column 6, lines 13 – 17). The wrap fibers can be conventional wrap fibers such as cotton, polyester, or nylon (column 6, lines 19 – 21). In the examples, Weber, Jr. et al. discloses that the polyester wrap yarn is dyed polyester (Table 2).

Additionally, Weber, Jr. et al. refers to additional patents which teach how to make yarns and fabrics containing commingled and composite fibers and/or two types of fibers woven together, where PBO can be used instead of, or in addition to the aramid fibers (column 6, lines 46 – 60). Kolmes et al. (US 4,936,085) discloses a core wrapped fiber which contains cut-

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resistant fibers and nylon or polyester strands (abstract). Warner (US 4,918,912) teaches a spun yarn comprising a blend of three different staple fibers (abstract). And Giesick (US 4,856,110) discloses a woven material having cut resistant metal or aramid fibers mixed in a sock (abstract). Therefore, claims 19 – 21 and 23 are anticipated by Weber, Jr. et al.

With respect to claims 22 and 24, the limitation that the woven fabric is used in a loud-speaker is viewed as intended use since the claims fail to positively recite the structure of the loud-speaker other than the woven fabric itself. Further, it has been held that a recitation with respect to the manner in which a claimed product is intended to be employed does not differentiate the claimed product from a prior art product satisfying the claimed structural limitation. *Ex parte Masham*, 2 USPQ2d 1647 (1987). Therefore, these claims are also anticipated by Weber, Jr. et al.

III. Claims 21 – 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over RD 354039 A in view of Weber, Jr. et al.

RD 354039A discloses that PBO can be used as a blend in various end uses such as protective clothing, fire resistant fabrics, and speaker cones (abstract). Further, RD 354039 A discloses that PBO has equal or better tensile elongation and compressive strength, and lower moisture absorption and lower and more stable dielectric constant as compared to known aramid fibers (abstract). However, RD 354039 A fails to teach how the fiber is made into a fabric. The features of Weber, Jr. et al. have been set forth in the previous Office Action. Weber, Jr. et al. is drawn to fabrics made from PBO fibers. Weber, Jr. et al. discloses that PBO fibers can be used by themselves or combined with conventional fibers or yarns, such as nylon, polyester or rayon, and knit, braided, woven or formed into nonwoven fabrics (column 6, lines 34 – 42). Therefore,

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it would have been obvious to one having ordinary skill in the art to produce blended woven fabrics having PBO as described by Weber, Jr. et al. and using those fabrics in any of the end uses disclosed for PBO in RD 354039 A since RD 354039 A discloses that PBO fibers can be used in any number of end uses and that PBO fibers have equal or better properties than aramid fibers. Thus, claims 21 – 24 are rejected.

(10) Response to Argument

I. The applicant argues that the claims are rejected because they are broad and not because the terms “diaphragm”, “loud-speaker”, or “loud-speaker diaphragm” are indefinite (Appeal Brief, pages 4 – 5). As set forth in previous responses and in the present Appeal Brief, the applicant considers the terms to add structure to the claim language and cannot be considered intended use. The applicant argues the claims were interpreted as broad, i.e., requiring only the claimed woven fabric. The applicant also argues that the claims recite more structure than just the woven fabrics taught by the prior art because of the fact that the claims recite that the fabric is for use in a “diaphragm” or “loud speaker”. Thus, the question becomes what are the structural limitations added by these terms, such that the claims are drawn to more than just a woven fabric?

The applicant states that the “diaphragm” and “loud speaker” are shown in Figures 6A and 6B, however, this statement does not define what the minimum features present in a diaphragm or loud speaker are. Further, the applicant argues that the loud speaker and diaphragm are structures which are able to produce sound. While the claimed fabric, by itself, might not produce great sound quality, it is known that the stiff fibers used to produce the fabric, are capable of vibrating to some degree and producing sound waves. Thus, the woven fabric by

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itself meets these argued limitations. Therefore, it is unclear what further structure must be present for the woven fabric to be a diaphragm and not just a plain woven fabric as disclosed by the prior art? And what structure or weight should be given to the term “loud speaker”? How is the claimed woven fabric modified or positioned such that it is part of a loud speaker and not just a plain woven fabric?

It would seem, based on the applicant's arguments, that the terms should be given weight in the claim other than what they have been given, but up to now, it is unclear how the applicant defines these terms and what structure or additional limitations should be interpreted in the claimed language to distinguish the present claims from the prior art? Thus, the definitions of the terms “diaphragm”, “loud speaker”, or “loud speaker diaphragm” are not being rejected because they are broad, as argued by the applicant, but because it is unclear how they should be interpreted and how they are defined, either by applicant, or in the art in general. It has never been the examiner's intent to ignore the terms, but rather it is unclear what structure is added to the claimed woven fabric by the use of the terms and hence what weight should be given the terms. Thus, the terms are considered to be indefinite.

II. The applicant argues that the Weber, Jr. et al., fails to teach all the claimed limitations because the prior art fails to address the claimed structural limitations of the diaphragm and the loud speaker (Appeal Brief, pages 6 – 9). First, it has been held that if a prior art structure is capable of performing the intended use as recited in the preamble, then it meets the claim. See, e.g., *In re Schreiber*, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997). Further, it has been held that “Arguments that the alleged anticipatory prior art is nonanalogous art’ or teaches away from the invention’ or is not recognized as solving the problem solved by the

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claimed invention, [are] not germane' to a rejection under section 102." *Twin Disc, Inc. v. United States*, 231 USPQ 417, 424 (Cl. Ct. 1986) (quoting *In re Self*, 671 F.2d 1344, 213 USPQ 1, 7 (CCPA 1982)). In other words, if the prior art teaches all the positively recited structural limitations then it will anticipate the claimed invention even if the claimed invention has a different use or function.

Specifically, the applicant argues that Weber, Jr. et al. fails to teach a loud speaker, as claimed in claims 22 and 24. First, claim 22 recites "a loud speaker comprising a loud speaker diaphragm characterized in that the loud speaker diaphragm is made up of said woven fabric for loud speaker diaphragm according to claims 19 or 20." Thus, the claimed loud speaker comprises a loud speaker diaphragm, and said diaphragm is defined as "being made of said woven fabric... according to claims 19 or 20." The loud speaker itself, is only defined as comprising a loud speaker diaphragm, which is the woven fabric. There are no other components or structural features set forth in the claim to define the loud speaker. Further, while it is true that the claim uses the term "comprising" which allows other components to be part of the diaphragm or the loud speaker, there are no other positively claimed or required components. Therefore, based on the broadest interpretation of the claim, anything teaching the woven fabric of claim 19 or 20 would meet the claimed structural limitations of the loud speaker, since the loud speaker is defined as being a diaphragm and the diaphragm is defined as the woven fabric itself.

Claim 24 is similar to claim 22, and states "a loud speaker comprising a diaphragm, a portion of the diaphragm comprising a woven fabric". The claims again defines only the structure of the woven fabric and no other components of the diaphragm or loud speaker. Thus,

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the loud speaker is defined by the diaphragm which is defined as having a portion comprising the woven fabric. This limitation would also include a diaphragm where the entire diaphragm is made of the claimed woven fabric, and not just a portion of the diaphragm is made of the woven fabric. Thus, the loud speaker recited in the preamble and defined by the structure of the diaphragm is defined by the limitations of the woven fabric and does not require any additional components to produce the loud speaker.

Therefore, while the applicant argues that the terms “diaphragm” and “loud speaker” are more than intended use or limitations with regards to what the fabric is capable of and should be given weight in the claim, the terms are defined within the claim as having the structure of the woven fabric itself and nothing more. The applicant has not provided a definition for the terms either in the specification or claims which would supplement how they are defined in the claims. Without a clear definition as to what further structure is added by either term, the claims only require a woven fabric made from PBO fibers and a second fiber as recited in the claims. Thus, if the prior art teaches the woven fabric, then the prior art teaches the diaphragm and the loud speaker as well, since these components are only defined by the woven fabric itself.

Next, the applicant argues that claims 21 and 23 recite a diaphragm structure for loud speakers, which is not taught by the prior art. However, while claim 21 is drawn to a diaphragm for a loud speaker “characterized in that said woven fabric for loud speaker diaphragm ... is used in at least a portion of the diaphragm” the claim again defines the diaphragm by the woven fabric only. Hence, when the diaphragm itself is made up 100% of the woven fabric, any woven fabric having the claimed fabric limitations would read on the claimed diaphragm. The claims further state the diaphragm is “for [a] loud speaker diaphragm”, but this limitation is not a positively

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recited limitation and only requires that the fabric is capable of use in a loud speaker. Since the fabric of Weber, Jr. et al. has the same structural components as the claimed product, then it would be capable of being used in a loud speaker.

The applicant has argued that the diaphragm is shown in and defined by Figures 6A, as a part of a loud speaker 6B (Appeal Brief, page 7). However, it is unclear what breadth and life the figures give to the term “diaphragm” as it is defined in the claim, as set forth above. The term “diaphragm” is defined within claim 21 as comprising the claimed PBO woven fabric. Further, claim 23 also defines the diaphragm by the features of the woven fabric. The preamble states “a diaphragm for a loud speaker comprising a woven fabric”. The phrase “for a loud speaker” is considered to be intended use, as set forth above, and is not sufficient to distinguish the claims from the prior art. Thus, if the prior art teaches the claimed woven fabric, then the prior art teaches the diaphragm, as defined by the claimed, as well.

Finally, the applicant argues that Weber, Jr. et al. fails to teach a woven fabric for a loud speaker as recited in claim 19 (Appeal Brief, page 8). The applicant further argues that any terminology in a preamble that limits the structure of the claimed invention must be treated as a claim limitation and that the preamble must be read in context of the entire claim. In claim 19, the only mention of a diaphragm is as follows: “a woven fabric for loud speaker diaphragm using a woven fabric ...”. Thus, the preamble positively recites the woven fabric limitation, which is taught in the prior art. However, the limitation “for loud speaker diaphragm” is not a positively recited limitation, but refers to how the fabric can be used, and does not add any positive structural limitations to the claimed woven fabric. Claim 20 uses the same preamble language and does not positively recite limitation drawn to a diaphragm or a loud speaker in the remainder

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of the claim. Thus, as set forth above, the intended use language is not given patentable weight. Further, where a claim meets all the positively claimed features, the fact that the prior art does not teach using the product in the same manner is not sufficient to distinguish the product from the prior art. And while Weber, Jr. discloses uses which have specific fabric structure, the patent as a whole is also drawn to generic woven or knitted fabrics made from PBO and blended with other fibers. Thus, rejection is maintained.

III. The applicant argues that the prior art fails to supply motivation to use the PBO blended fabric taught by Weber in a the various uses of PBO fabric disclosed in RD 354039 (Appeal Brief, pages 9 – 13). However, Weber is drawn generally to producing knit or woven fabrics comprising PBO fibers and teaches that these fabrics can be used in protective garments. RD 354039 is drawn generally to PBO fibers and the various ways that the fibers and fabrics made from the fibers can be used. These uses include protective PBO fabrics which are used in ballistic, cut resistant, and fire resistant applications, as well as specialty fabrics which are used in space suits, sail cloths, and speaker cones (Sections I. A – E and XX.) Specifically RD 354039 teaches that PBO can be used in fabrics to produce speaker cones because of it's high tensile properties. Further, the applicant also discloses that it is known to use blended PBO fabrics in speaker cones. Thus, it would be obvious to one having ordinary skill in the art to use the blended, high strength, PBO woven fabrics disclosed by Weber in various applications as disclosed by RD 354039 and further acknowledged by the applicant, which require high strength fibers and in which it is known to use PBO fabrics. These applications include protective fabrics as well as sail cloths or speaker cones. Taking a known PBO fabric and using it in applications which are known to use PBO fabrics would expand the marketability of the fabric. Therefore,

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the motivation would be to expand the uses of a known product and the prior art provides expectation of success, since PBO fabrics are known in the speaker cone field. Thus, the rejection is maintained.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,


Jenna-Leigh Befumo

December 9, 2005

Conferees:

Terrel Morris — *FM*

Carol Chaney *CC*